CLAIMS

What is claimed is:

1. A method of encoding data in a pattern of symbols on a surface, said method comprising:

dividing an ordered sequence of digits representative of the encoded data into a plurality of sequential windows, wherein each of the sequential windows includes a partial sequence of the ordered sequence of digits;

transforming the partial sequence included in each sequential window into a series of digits; and

arranging a symbol within a plurality of surface windows on the surface, wherein each surface window corresponds to one of the sequential windows, wherein a position of the symbol within each surface window is based on one of the transformed series of digits, and wherein the position of the symbol within the surface window is indicative of the encoded data.

2. The method of claim 1, wherein the encoded data indicates a unique position on the surface so that the position of the symbol within each surface window indicates the unique position on the surface.

3. The method of claim 1, wherein said dividing the ordered sequence of digits comprises dividing the ordered sequence of digits into a plurality of non-overlapping and equally sized sequential windows.

4. The method of claim 1, wherein the ordered sequence of digits is an ordered sequence of binary digits, and wherein said transforming the partial sequence into the series of digits comprises:

representing the partial sequence included in each sequential window as a decimal digit,

applying a mathematical function to the decimal digit,

transforming the decimal digit that has been applied with the mathematical function into a binary representation, and

wherein the binary representation indicates the series of digits.

5. The method of claim 4, wherein said applying the mathematical function to the decimal digit comprises applying a predetermined number to a power of a value of the decimal digit.

6. The method of claim 5, wherein the predetermined number is 2.

7. The method of claim 5, wherein said transforming the decimal digit comprises transforming the decimal digit that has been applied the mathematical function into the binary representation having a predetermined length, and wherein said arranging the

symbol within the surface windows on the surface comprises determining a position of a selected binary digit type within the length of the binary representation and arranging the symbol within the surface windows based on the determined position of the selected binary digit type.

8. The method of claim 7, wherein the selected binary digit type is "1".

9. The method of claim 1, further comprising arranging the ordered sequence of digits as a function of a geometric shape of the surface, and wherein said dividing the ordered sequence of digits comprises dividing the ordered sequence of digits into the plurality of sequential windows based on the geometric shape of the surface.

10. The method of claim 9, wherein the geometric shape of the surface is rectangular, and wherein said arranging the ordered sequence of digits comprises arranging the ordered sequence of digits as a rectangular array.

11. The method of claim 1, wherein the ordered sequence of digits has a characteristic such that a location in the ordered sequence of digits of each partial sequence of a predetermined length is unambiguously determined.

12. The method of claim 1, wherein one or more computer-readable media have computer-executable instructions for performing the method recited in claim 1.

13. A method of decoding a pattern of symbols on a surface to determine data corresponding to the pattern, the pattern being divided into a plurality of windows on the surface, said method comprising:

detecting the symbols on the surface to determine their pattern;

determining window boundaries for the determined pattern, said window boundaries defining at least one of the windows, each defined window including at least one of the detected symbols associated therewith; and

determining a position of the detected symbol within the associated window, wherein the determined position of the detected symbol within the associated window indicates the data corresponding to the pattern.

14. The method of claim 13, wherein the data corresponding to the pattern indicates a unique position on the surface so that the determined position of the detected symbol within the associated window indicates the unique position on the surface.

15. The method of claim 13, wherein the pattern is being divided into a plurality of non-overlapping and equally sized windows, and wherein the determined window boundaries define at least one of the non-overlapping and equally sized windows.

16. The method of claim 13, wherein the determined position of the detected symbol within the associated window of at least two adjacent windows indicates the

data corresponding to the pattern, and wherein said detecting the symbols on the surface comprises detecting symbols included in the two adjacent windows.

17. The method of claim 13, wherein said determining the window boundaries comprises:

determining a length of each window;

identifying a potential window boundary, said potential window boundary located between two symbols on the surface, said two symbols located on the surface for at most the determined length apart from each other; and

establishing other window boundaries based on the identified potential window boundary.

18. The method of claim 17, wherein said identifying the potential window boundary comprises incrementally identifying the potential window boundary across a first direction of the surface, and wherein said establishing the other window boundaries comprises incrementally establishing the other window boundaries across a second direction of the surface based on the identified potential window boundary.

19. The method of claim 13, further comprising determining a number series as a function of the determined position of the detected symbol within the associated window, said number series indicative of the data corresponding to the pattern.

20. The method of claim 13, further comprising rotating the detected symbols via a mask function to align the detected symbols with an axis of the surface, said mask function based on a continuous space on the surface.

21. The method of claim 13, wherein one or more computer-readable media have computer-executable instructions for performing the method recited in claim 13.

22. An article comprising a surface and a pattern on the surface, said pattern having symbols on the surface, each symbol having a position on the surface based on an ordered sequence of digits representative of encoded data and divided into a plurality of windows, each window including at least one of the symbols, wherein the position of the symbol within the window indicates the encoded data.

23. The article of claim 22, wherein the encoded data is indicative of a unique position on the surface so that the position of the symbol within the window indicates the unique position on the surface.

24. The article of claim 22, wherein the position of the symbol within the window of at least two adjacent windows indicates the encoded data.

25. The article of claim 22, wherein the ordered sequence of digits is an ordered sequence of binary digits, said ordered sequence of binary digits having a characteristic

such that a location in the ordered sequence of binary digits of each partial sequence of a predetermined length is unambiguously determined.

26. The article of claim 22, wherein the windows are defined by a plurality of window boundaries, wherein each of the windows has a predetermined length, wherein each of the window boundaries is located between two symbols on the surface, and wherein the two symbols are located on the surface for at most the predetermined length apart from each other.

27. The article of claim 22, wherein the position of the symbol within the window indicates a series of digits, said series of digits indicative of a partial sequence of the ordered sequence of digits representative of the encoded data.

28. A system for encoding data in a pattern of symbols on a surface, said system comprising:

a processor configured to execute computer-executable instructions to:

separate an ordered sequence of digits representative of the encoded data into a plurality of sequential windows, wherein each of the sequential windows includes a partial sequence of the ordered sequence of digits, and

transforming the partial sequence included in each sequential window into a series of digits; and

means for arranging a symbol within a plurality of surface windows on the surface, wherein each surface window corresponds to one of the sequential windows,

wherein a position of the symbol within each surface window is based on one of the transformed series of digits, and wherein the position of the symbol within the surface window is indicative of the encoded data.

29. The system of claim 28, wherein the encoded data indicates a unique position on the surface so that the position of the symbol within each surface window indicates the unique position on the surface.

30. The system of claim 28, wherein the ordered sequence of digits is an ordered sequence of binary digits, and wherein the computer-executable instructions to transform the partial sequence included in each sequential window comprise computer-executable instructions to:

represent the partial sequence included in each sequential window as a decimal digit,

apply a mathematical function to the decimal digit,

convert the decimal digit that has been applied with the mathematical function into a binary representation, and

wherein the binary representation constitutes the series of digits.

31. The system of claim 30, wherein said computer-executable instructions to apply the mathematical function comprise computer-executable instructions to apply a predetermined number to a power of a value of the decimal digit.

32. The system of claim 31, wherein the predetermined number is 2.

33. The system of claim 31, wherein said binary representation has a predetermined length, and wherein said symbol is arranged within each surface window by determining a position of a selected binary digit type within the length of the binary representation and placing the symbol within the surface window based on the determined position of the selected binary digit type.

34. The system of claim 33, wherein the selected binary digit type is "1".

35. A system for decoding a pattern of symbols on a surface to determine data corresponding to the pattern, the pattern being divided into a plurality of windows on the surface, said system comprising:

a sensor to detect the symbols on the surface to determine their pattern;

a processor configured to execute computer-executable instructions to:

determine window boundaries for the determined pattern, said window boundaries defining at least one of the windows, each defined window including at least one of the detected symbols associated therewith, and

identify a position of the detected symbol within the associated window to determine the data corresponding to the pattern.

36. The system of claim 35, wherein the data corresponding to the pattern indicates a unique position on the surface so that the identified position of the detected symbol within the associated window indicates the unique position on the surface.

37. The system of claim 35, wherein said sensor is configured to detect symbols included in at least two adjacent windows.

38. The system of claim 35, wherein said computer-executable instructions to determine the window boundaries comprise computer-executable instructions to:

determine a length of each window;

identify a potential window boundary, said potential window boundary located between two symbols on the surface, said two symbols located on the surface for at most the determined length apart from each other; and

establish other window boundaries based on the identified potential window boundary.

39. The system of claim 35, where the processor is configured to execute computer-executable instructions to determine the window boundaries for the determined pattern as a function of a trajectory of the sensor on the surface.

40. The system of claim 35, wherein said computer-executable instructions to identify the position of the detected symbol comprise computer-executable instructions to determine a number series as a function of the identified position of the detected

symbol within the associated window, said number series representative of the data corresponding to the pattern.